SAF-RC-032 100-F Remaining Sites Burial Grounds Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (3) H9-02

ANITIAL DATE HOLE

COMMENTS:

SDG K0262

SAF-RC-032

RECEIVED
JUN 2 2 2006

EDMC

Waste Site: 1607-F-3 / 1607-F-5

Date:

6 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Sites 1607-F-3

Subject: Volatile Organics - Data Package No. K0262-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0262 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

- Earno e di ca			": Nyajidanjan	war Date
J11L17	3/20/06	Soil	С	VOAs by 8260B

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the methylene chloride result was qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

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Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field blanks were submitted for analysis.

· Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Seven analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

(1) 17 mm 1. 4 mm 1. 1940 27 mm 4. 4 mm 4. 4 mm 1. 1 mm 4. 1

· Completeness

Data package No. K0262 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, the methylene chloride result was qualified as undetected, raised to the RQL and flagged "U". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Seven analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Summary of Data Qualification

VOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG!'K0262 15 234	EBVIEWER	Reject 1607-F-3	PAGE <u>1</u> OF 1
COMMENTS:			New Control of the Co
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Blank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI					
Case: SDG: K0262					
Sample Number		J11L17			
Remarks					
Sample Date		3/20/06			
Analysis Date		4/2/06			
VOA	RQL	Result	ø		
Chloromethane	10		Ü		
Bromomethane	10		ے		
Vinyl Chloride	10	12	ح		
Chioroethane	10	12	5		
Methylene Chloride	10	10	J		
Acetone	10	5			
Carbon Disulfide	10	6	ح		
1,1-Dichloroethene	10	6	د		
1,1-Dichloroethane	10	6	U		
1,2-Dichloroethene (total)	10	6	υ		
Chloroform	10	1			
1,2-Dichloroethane	10	6	U		
2-Butanone	10	12	υ		
1,1,1-Trichloroethane	10	6	Ü		
Carbon Tetrachloride	10	6	U		
Bromodichloromethane	10	6	U		
1,2-Dichloropropane	10	6	U		
cls-1,3-Dichloropropene	10	6	υ		
Trichloroethene	10	6	U		
Dibromochloromethane	10	6	U		
1,1,2-Trichloroethane	10	6	Ū		
Benzene	10	6	U		
trans-1,3-Dichloropropene	10	6	U		
Bromoform	10	6	U		
4-Methyl-2-pentanone	10	12	U		
2-Hexanone	10	12	Ū		
Tetrachioroethene	10	6	U		
1,1,2,2-Tetrachloroethane	10	6	U		
Toluene	10	6	U		
Chlorobenzene	10	6	U		
Ethylbenzene	10	6	υ		
Styrene	10	6	U		
Xylene	10	6	U		
cis-1,2-Dichloroethene	10	6	U		
trans-1,2-Dichloroethene	10	6	U		

Report Date: 04/06/06 09:42

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

RFW Batch Number: 0603L573 Client: TNUHANFORD RC-032 K0262 Work Order: 11343606001 Page: la

Cust ID:	J11L17	J11L17	J11L17	VBLKVE	VBLKVE BS	
Sample RFW#: Information Matrix:	001 SOIL	001 MS SOIL	001 MSD SOIL	06LVK050-MB1 SOIL	06LVK050-MB1 SOIL	
D.F.: Units:	1.11 ug/Kg	1.04 ug/Kg	1.04 ug/Kg	1.00 ug/ K g	1.00 ug/Kg	
Toluene-d8	121 %	113 %	113 %		111 %	
Surrogate Bromofluorobenzene Recovery 1,2-Dichloroethane-d4	131 * % 122 %	132 * % 125 %	93	122	116 % 132 %	f1
Chloromethane	12 : U	102 %	95 %	10 U	94 %	
Bromomethane	12 U	134 %	129 %	10 U	129 %	
Vinyl Chloride	12 U	106 %	102 %	10 U	86 %	
Chloroethane	12 U	120 %	118 %	10 U	99 %	
Methylene Chloride	10 gm U	75 %	76 %	5 J	67 %	•
Acetone	5 J	195 %	209 %	10 U	133 %	
Carbon Disulfide	6 U	115 %	112 %	5 U	103 %	$\gamma \nu$
1,1-Dichloroethene	6 U	1 15 %	114 %	5 U	100 ቄ	<i>\</i> / .
1,1-Dichloroethane	6 U	115 %	116 %	5 U	105 %	
1,2-Dichloroethene (total)	6 U	106 %	105 %	5 U	95 %	ما(ز) ان ا
Chloroform	1 J	102 %	104 %	5 U	97 %	, 141
1,2-Dichloroethane	6 U	126 %	130 %	5 Ü	120 %	M
2-Butanone	12 U	141 %	159 %	10 U	118 %	•
1,1,1-Trichloroethane	6 U	129 %	133 %	5 U	124 %	
Carbon Tetrachloride	6 U	134 %	138 %	5 U	130 %	•
Bromodichloromethane	6 U	120 %	123 %	5 U	113 %	
1,2-Dichloropropane	6 U	111 %	111 %	5 Ü	102 %	
cis-1,3-Dichloropropene	6 U	113 %	112 %	5 U	103 %	
Trichloroethene	6 U	116 %	118 %	5 U	107 %	
DIDIO#OCHIOLOGUECHONE	6 U	125 %	130 %	5 U	116 %	
1,1,2-Trichloroethane	6 U	113 %	114 %	5 U	99 %	
Benzene	6 U	110 %	111 %	· 5 U	100 ሄ	
Trans-1,3-Dichloropropene	6 U	118 %	116 %	5 Ü	105 %	
Bromoform	6 U	120 %	119 %	5 U	1 12 %	
4-Methyl-2-pentanone	12 U	108 %	112 %	10 U	91 %	
2-Hexanone	12 U	120 %	111 %	2 J	93 %	
Tetrachloroethene	6 U	118 %	123 %	5 U	108 %	
1,1,2,2-Tetrachloroethane	6 U	129 %	133 * %	5 U	104 %	
Toluene	6 U	111 %	112 %	5 Ū	99 %	

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0603L5	73 Clie	ent: TNUH	<u>IANFOR</u>	D RC-032	K0262	Work (Orde	r: 113436060	01 Pa	ge: 1]	<u> </u>	
•	Cust ID:	J11L17	•	J11L1	7	J11L1	7	VBLKVE	VBL	KVE BS	_	
	RFW#:	001		001 M	s	001 MS	D	06LVK050-MB	1 061	VK050-1	MB1	
Chlorobenzene		. 6	Ū	103	<u>-</u>	105		5	[]	97	<u> </u>	
Ethylbenzene		6	U	105	왐	108	8	5	U U	96	*	
Styrene		. 6	U	98	*	100	*	5		94	*	
Xylene (total)		6	υ	101	ક	105	ş	5	•	95	*	
cis-1,2-dichloroethene_		6	ប	105	§	104	ş	_	U .	95	*	
trans-1,2-dichloroethene		6	υ	107	8	106	8	_	U	95	ş.	
*= Outside of RDA CT.D OC	limite				•				~			

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Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-032

LVL#: 0603L573

SDG/SAF # K0262/RC-032

W.O. #: 11343-606-001-9999-00

Date Received: 03-22-2006

GC/MS VOLATILE

One (1) soil sample was collected on 03-20-2006.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 04-02-2006.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
- 2. The sample was analyzed within required holding time.
- 3. Non-target compounds were detected in the sample.
- 4. Two (2) of fifteen (15) surrogate recoveries were outside acceptance criteria. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample J11L17.
- 5. One (1) of seventy (70) matrix spike recoveries was outside acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. The method blank contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL. The method blank also contained the target compound 2-Hexanone at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 4 pages.

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- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain/Daniels/

Laboratory Manager

Lionville Laboratory Incorporated

som\group\data\voa\tnu-banford\0603-573.doc

4/11/06 Date



Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

DATA PACKAGE COMPLETENESS AND CASE NARRATIVE echnical verification documentation present? INSTRUMENT TUNING AND CALIBRATION (Levels D and E) C/MS tuning/performance check acceptable? DATE: G/2 &						
VALIDATOR: TLT LAB: LLT SDG: KOLC2 ANALYSES PERFORMED SW-846 8260 SW-846 8260 SW-846 8270 (TCLP) SAMPLES/MATRIX SOLL DATA PACKAGE COMPLETENESS AND CASE NARRATIVE echnical verification documentation present? INSTRUMENT TUNING AND CALIBRATION (Levels D and E) C/MS tuning/performance check acceptable? Yes No ontinuing calibrations acceptable? Yes No ontinuing calibrations acceptable? Yes No introduction in the complete of the continuing calibrations acceptable? Yes No introduction in the continuing calibrations acceptable? Yes No introduction check acceptable?	VALIDATION LEVEL:	Α	В		D	E
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GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No (N/A
Calibration blank results acceptable? (Levels D, E)	Yes No (N/A
Laboratory blanks analyzed?	Y No N/A
Laboratory blank results acceptable?	Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	
Comments: Mc - Uat RQL	no FB
	,
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	
Surrogate/system monitoring compound recoveries acceptable?	
Surrogates traceable? (Levels D, E)	Yes No N/A
Surrogates expired? (Levels D, E)	Yes No N/A
MS/MSD samples analyzed?	Yes No N/A
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (N/A
MS/MSD standards? (Levels D, E)	
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	(Yes) No N/A
Standards traceable? (Levels D, E)	Yes No (N/A
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (V/A
Performance audit sample(s) analyzed?	Yes N/A
Performance audit sample results acceptable?	Yes No 🚧
Comments:	no PAS
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GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels	C, D, and E)	
MS/MSD samples analyzed?		(Yes/No N/A
MS/MSD RPD values acceptal	ole?	(Ye) No N4
MS/MSD standards NIST trace	eable? (Levels D, E)	Yes No N
MS/MSD standards expired? (I	Levels D, E)	Yes No WA
Field duplicate RPD values acc	eptable?	Yes No (N/)
Field split RPD values accepta	ble?	Yes No
Transcription/calculation errors	s? (Levels D, E)	Yes No (NXA
Comments:		
	<u> </u>	
	: :	
6. SYSTEM PERFORM	MANCE (Levels D and E)	~ \
Internal standards analyzed?		Yes No N/A
Iinternal standard areas accepta	ble?	Yes No N/A
Internal standard retention time	s acceptable?	Yes No N/A
Standards traceable?		Yes No/N/A
Standards expired?		
Transcription/calculation errors	s?	Yes No N/A
Comments:		$\overline{}$
	:	
	<u> </u>	
7. HOLDING TIMES (all levels)	
Samples properly preserved?		Yes No N/A
	le?	i i
Comments:		
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	:	
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GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. COMPOUND IDENTIFICATION, QUANTITATION, AND DE	TECTION LIMITS (all
levels)	
Compound identification acceptable? (Levels D, E)	~
Compound quantitation acceptable? (Levels D, E)	
Results reported for all requested analyses?	(Yes)No N/A
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No N/A
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes_No N/A
Detection limits meet RDL?	Ye NA
Transcription/calculation errors? (Levels D, E) Comments:	
Comments.	
	•
:	1977-1971-1971-1971-1971-1971-1971-1971
9. SAMPLE CLEANUP (Levels D and E)	
GPC cleanup performed?	Yes No N/A
GPC check performed?	
GPC check recoveries acceptable?	†
GPC calibration performed?	Į.
GPC calibration check performed?	i
GPC calibration check retention times acceptable?	1
Check/calibration materials traceable?	
Check/calibration materials Expired?	l i
Analytical batch QC given similar cleanup?	3 i
Transcription/Calculation Errors?	\ [
Comments:	

Date:

6 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 1607-F-3/1607-F-5

Subject: Semivolatile - Data Package No. K0262-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0262 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Samplé-ID	Sample Date	Media	Validation	Date
J11L17	3/20/06	Soil	С	See note 1
J11L18	3/20/06	Soil	С	See note 1

^{1 -} Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No equipment blanks were submitted for analysis.

· Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the

spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

· Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

· Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Sixteen analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

· Completeness

Data package No. K0262 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

• Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods

Sixteen analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

000004

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

SEMIVOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: K0262-1	PRVIEWER SPILOFERE	Francis 11607-F-5 William R 1607-F-3	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSURE HANFORD													
Laboratory: LLI SDG: K0262													
Sample Number		J11L17		J11L18				Sample Number		J11L17		J11L18	
Remarks						·		Remarks					
Sample Date		3/20/06		3/20/06				Sample Date		3/20/06		3/20/06	
Extraction Date		3/27/06		3/27/06				Extraction Date		3/27/06		3/27/06	
Analysis Date		3/30/06		4/5/06				Analysis Date		3/30/06		4/5/06	
Semivolatile (8270C)	RQL		Q		Q	Result	Q	Semivolatile (8270C)	RQL	Result	ø	Result	Q
Phenol	660	350		350				3-Nitroaniline*	660	870		880	U
bis(2-Chloroethyl)ether	660			350	-		<u> </u>	Acenaphthene	660	350		350	U
2-Chlorophenol	660			350	U_			2,4-Dinitrophenol*	660	870	۳	880	C
1,3-Dichlorobenzene	660			350	U	<u> </u>		4-Nitrophenol*	660	870	حا	880	U
1,4-Dichlorobenzene	660			350	U			Dibenzofuran	660	350	U	350	U
1,2-Dichlorobenzene	660	***		350	U			2,4-Dinitrotoluene	660	350	U	350	U
2-Methylphenol	660			350				Diethylphthalate	660	350	υ	350	
2,2'-oxybis(1-chloropropane)	660	350	υ	350	U		T	4-Chiorophenyl-phenyl ether	660	350	U	350	Ú
3 and/or 4-Methylphenol	660	350	U	350	U		1	Fluorene	660	350	U	350	
N-Nitroso-di-n-propylamine	660	350	U	350	U			4-Nitroaniline*	660	870	U	880) U
Hexachloroethane	660	350	U	350	U			4,6-Dinitro-2-methylphenol*	660	870	U	880) U
Nitrobenzene	660	350	U	350	U			N-Nitrosodiphenylamine	660	350	U	350) U
Isophorone	660	350	U	350	U		1	4-Bromophenyl-phenyl ether	660	350	U	350	υ
2-Nitrophenol	660	350	U	350	V		Т	Hexachlorobenzene	660	350	U	350	υ
2,4-Dimethylphenol	660	350	U	350	U			Pentachlorophenot*	660	870	U	880	U
bis(2-Chloroethoxy)methane	660			350	υ			Phenanthrene	660	350	U	350	U
2,4-Dichlorophenol	660			350	U			Anthracene	660	350	U	350	U
1,2,4-Trichlorobenzene	660	350	U	350	U			Carbazole	660	350	U	350	U
Naphthalene	660	350	U	350	U			Di-n-butylphthalate	660	120		350	U
4-Chloroaniline	660	350	U	350	U			Fluoranthene	660	350	υ	350	U
Hexachlorobutadiene	660	350	U	350	Ū			Pyrene	660	350	U	350	U
4-Chloro-3-methylphenol	660			350	U	}		Butylbenzylphthalate	660	350	U	350	υ
2-Methylnaphthalene	660	350	U	350	U		\top	3,3'-Dichlorobenzidine	660	350	U	350) U
Hexachlorocyclopentadiene	660	350	U	350	U			Benzo(a)anthracene	660	350	U	350) U
2,4,6-Trichlorophenol	660	350	U	350	U			Chrysene	660	350	U	350) U
2,4,5-Trichlorophenol*	660	870	U	880	Ū	1	T	bis(2-Ethylhexyl)phthalate	660	660	U	660) U
2-Chioronaphthalene	660	350	U	350	U		\top	Di-n-octylphthalate	660	350	U	350) U
2-Nitroaniline*	660			880	U	1	T	Benzo(b)fluoranthene	660			350	_
Dimethylphthalate	660	350	U	350	Ü	ľ		Benzo(k)fluoranthene	660	350		350	U
Acenaphthylene	660	+		350		1	1	Benzo(a)pyrene	660	350		350	
2,6-Dinitrotoluene	660			350	-	1	1	Indeno(1,2,3-cd)pyrene	660			350	
		1		Ì		ļ <u>-</u>	1	Dibenz(a,h)anthracene	660		_	350	•—
			1		1			Benzo(g,h,i)perylene	660	350		350	
					1.			T191		, ,,,,,			<u>, -</u>

Report Date: 04/06/06 14:49

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Work Order: 11343606001

THOMPTARE HONOLOGOLY, INC.

Client: TNUHANFORD RC-032 K0262

RFW Batch Number: 0603L573

Semivolatiles by GC/MS, HSL List

J11L17 J11L18 Cust ID: J11L18 J11L18 SBLKVJ SBLKVJ BS REW#: 001 002 002 MS Sample 002 MSD 06LE0233-MB1 06LE0233-MB1 SOIL Information Matrix: SOIL SOIL SOIL SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 1.00 1.00 ug/Kg uq/Kq Units: uq/Kq uq/Kq uq/Ka ug/Kg Nitrobenzene-d5 56 * 53 . . 72 ¥ 70 Ł 68 ¥ 68 왕 2-Fluorobiphenyl 62 Ł Surrogate 62 \$ 80 ¥ 90 웋 64 ¥ 74 r Terphenyl-d14 88 ¥ Recovery 95 * 80 Ł 75 ¥ 90 ł 82 ş Phenol-d5 Ł 62 60 ¥ * 78 75 ¥ 65 읗 75 2-Fluorophenol 55 Ł 54 웋 65 * 62 * 64 ž 68 ş. 2,4,6-Tribromophenol Ŷ. 67 92 94 94 ž 76 ¥ 107 Phenol U 350 350 U 82 Ł 78 웋 330 IJ 84 뫍 bis(2-Chloroethyl)ether 350 U Ū 350 77 ¥ ᇂ 70 330 U 82 Ł 2-Chlorophenol____ 350 T 350 U 78 74 왐 330 U 85 1,3-Dichlorobenzene 350 T 350 U 58 62 웋 330 Ü 79 Ł C 1,4-Dichlorobenzene____ 350 U 350 U 59 62 と 330 U 79 1,2-Dichlorobenzene____ 350 U 350 U 66 ¥ 65 ¥ 330 U 96 ¥ 2-Methylphenol 350. U 350 · U 84 ¥ Ł 79 330 IJ 78 2,2'-oxybis(1-Chloropropane) 350 U 350 U 75 ¥. 69 * 330 U 75 4-Methylphenol____ 350 T 350 U 86 ¥ 84 왐 330 П 88 N-Nitroso-di-n-propylamine_ 350 U 350 U 85 ¥ 80 웋 330 Ħ 87 Hexachloroethane____ 350 U 350 U 58 옿 왐 60 330 IJ 79 ş Nitrobenzene _____ 350 U 350 U 75 ¥ 72 왐 330 IJ 72 Isophorone 350 U 350 IJ 89 r 85 Ł. 330 U 84 2-Nitrophenol_____ 350 Ü. 350 U. 79 78 욯 330 U 76 ş 2,4-Dimethylphenol U 350 350 U 74 77 各 330 IJ 66 bis(2-Chloroethoxy)methane____ 350 U 350 U 81 77 ¥ 330 IJ 74 왐 2,4-Dichlorophenol_____ 350 T 350 U 85 કૃ 84 웋 330 Ħ 77 ł 1,2,4-Trichlorobenzene____ 350 U 350 U 71 윻 71 ᇂ 330 IJ 77 ¥ Naphthalene 350 U 350 U 77 ş. 74 퇕 330 U 81 4-Chloroaniline 350 U 350 U 129 * % 130 * % 330 U 100 욯 Hexachlorobutadiene 350 U 350 U 74 暑 75 330 σ 88 4-Chloro-3-methylphenol____ 350 U 350 U 92 暑 86 ş 330 U 89 2-Methylmaphthalene 350 U 350 U 84 * 80 왐 330 U 89 Hexachlorocyclopentadiene 350 U 350 U 54 64 왐 330 U 68 2.4,6-Trichlorophenol____ 350 U 350 U 98 ¥ 105 330 U 98 2,4,5-Trichlorophenol 870 U 880 U 93 100 왐 830 U 83 왐 *= Outside of EPA CLP QC limits.

R alylor

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FW Batch Number: 050315/3 Cust ID:	J11L17	J11L18	J11L18 002 MS		J11L18	SBLKVJ	SBLKVJ BS		
RFW#:	001	002			002 MSD	06LE0233-MB1	06LE0233-MB1		
-Chloronaphthalene	350 U	350 U	86	&	92 %	330 U	83		
-Nitroaniline	870 U	880 U	97	¥	97 %	830 U	85		
Dimethylphthalate	350 U	350 U	82	ŧ	86 %	330 U	83		
cenaphthylene	350 U	350 U	87	¥	89 %	330 U	87		
,6-Dinitrotoluene	350 U	350 U	90	ક	92 %	330 U	80		
-Nitroaniline	870 U	880 U	126	ક	127 %	830 U	108		
Acenaphthene	350 U	350 U	87	ક	88 %		90		
2,4-Dinitrophenol	870 U	U 088	91	ł	83 %		48		
-Nitrophenol	870 U	880 U		r	95 %		84		
Dibenzofuran	250 11	350 U		8	86 %		94		
2,4-Dinitrotoluene		350 U		r F	95 %		98		
Diethylphthalate	350 U	350 U		¥	83 %		87		
1-Chlorophenyl-phenylether		350 U		ę.	86 %		90		
Pluorene	350 U	350 U		· E	88 %		86		
-Nitroaniline		880 U		¥.	107 %	••••	95		
,6-Dinitro-2-methylphenol	870 U	880 U		• }	103 %		84		
-Nitrosodiphenylamine (1)	350 U	350 U		ě	72 %		74		
-Bromophenyl-phenylether		350 U		ş	77 %		81		
lexachlorobenzene	350 U	350 U		· ¥	93 %		125		
Pentachlorophenol	870 U	880 U		- %	110		109		
henanthrene	350 U	350 U		*	101 %		100		
Anthracene	350 U	350 U	_	è.	96		102		
Carbazole		350 U		·	102	= = = =	94		
Di-n-butylphthalate		350 U		- %	98 %		98		
Fluoranthene		350 U		8	116	_	107		
Pyrene	350 U	350 U		ě	80 %		96		
Butylbenzylphthalate	350 U	350 U		· ·	84 8		89:		
3,3'-Dichlorobenzidine	350 บ	350 U	•	r	134 %	• • • •	116		
Benzo (a) anthracene	350 บ	350 U		8	94 8		91		
'hrvsene	350 U	350 U		8	88 %		89		
ois(2-Ethylhexyl)phthalate	(.60 82 (.01 8()	(60 75.00B)		ક	87 %	•••	89		
Di-n-octyl phthalate	350 U	350 U		ક	96				
Senzo(b) fluoranthene	. 350 U	350 U		¥	95 1				
Senzo(k) fluoranthene	350 U	350 U		ક્ષ	95				
Benzo(a) pyrene		350 U		8	92 1				
Indeno(1,2,3-cd)pyrene	•	350 U	110	ક	101 1				
Dibenz (a, h) anthracene	350 U	350 U	_	8	104 %				
Benzo(g,h,i)perylene						330 U	3.1		

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-032

LVL #: 0603L573

SDG/SAF # K0262/RC-032

W.O. #: 11343-606-001-9999-00

Date Received: 03-22-2006

SEMIVOLATILE

Two (2) soil samples were collected on 03-20-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 03-27-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 03-29,30-2006 and 04-05-2006.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in the samples.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. Two (2) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 5 pages.



- LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state 10. accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- I certify, that this sample data package is in compliance with SOW requirements, both 11. technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som\gorup\data\bna\tnu-hanford\0603-573.doc

4/10/06

Washington Closu	ington Closure Hanford CHAIN OF CU			ODY/S.	SAMPLE ANALYSIS REQUEST RC-032-027 Pag					Page <u>i</u>	of T				
Collector Colfman	······································		my Contact Coffman	Telephon 528-64		,			olect Coordin SSNER, JH	ator	Price Code &K			Data TurnarounM	
Project Designation 100-F Remaining Sites Bur	ial Grounds - Soil Full Pr		ing Location 7-F-3 Stock pile Area Ve	arification					F No. -032		Air	Quality		15	D078
Ice Chest No. ERC-9	19-062		Logbook No. -1174-1		COA 3 R607F\$20	875 3140	٠ -		chod of Ships Fed Ex	nent				·	
Shipped To EBERLINE SERVICES		Offsit	Property No. AO	6033	8			Bil	ll of Lading/A	Vic Bill	No.	SEE	OSAC		
POSSIBLE SAMPLE HAZ	ARDSÆMARKS														
KD.O.T. Ci	4		Preservation	Nosc	Cost 4C	Coal 4C	Cool	4C	Cool 4C	None					
Special Handling and/or		•	Type of Container		aG	aG	a/C	; 	aG .	G/P	<u>'</u>				
Cool 4 degrees C			No. of Container(s)	,	1	<u> </u>	1		1	1,			<u> </u>	<u> </u>	<u> </u>
			Volume	250g	60sal.	120mL	120a	nail.	125mL	100m	ıL.				
				See item (1) in Special Instructions.	PCBs - 8082	Scmi-VOA - 8270A (TCL)	VOA - I		Posticides - \$0\$1	See item (Special Instruction	a i 1				
	Sample ana	LYSIS	·						·	4	o A				
Sample No.	Matrix *	Sample Date	Sample Time					. S (M). E E					2.54		Mark
J11L17	SOIL	3/20/06	1230	X	X	X		<u>-</u>	X	Ó	1				
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CHAIN OF POSSESS		Sign/Prin				CIAL INSTE	RUCTIO	ONS							Matrix *
Relinquished By/Removed From RTCOFFM AN RTC	Date/Time	Received By/Sto	2A 3728,	ale/Time 0	Cad	mium, Calcium,	Chromic	um, C	t) Aluminum, A lobalt, Capper, b lon, Silver, Sodi	on, Lesc	d, Ma	greșium Man	ganese, Molyl	denum.	S=Suit SE=Suitment SO=Sotel St=State
3728 # 2A 3-21-			den Ingland		0 = (2)	Gamma Spectro	есору (Т	ICL L	.ist) (Cesium-13 .dd-on (Silver-10	7, Cobal	ţ-60, l	Europium-152	2. Europium-I.	54,	D=Oil
Refinquished By/Removed From				Pate/Time		,	•		•			•			A=Air DS=Dtytu Solic
Relinquished By Removed From	Date/Time	Received By/Sic	red In D	Pate/Figne	اید	•									DU-Drum Cqu T=Tissuc Wi=Wipe U-Uquid
Relinquished By/Removed From	3-22-06 09-36 Date/Time	Received By/Sic		Date/Time		sonnel not av	zilshle	1n							V=Other
Relinquished By/Removed From	Date/Time	Received By/Str	ored In I)ate/Time	rel	inquish sampl # 28 on 3	les from	a 372	18 6						
LABORATORY Received	l By			Ti	ide ·						<u></u>			Date/Time	
FINAL SAMPLE Disposal DISPOSITION	Method				.	Disp	osed By	•						Date/Fime	
															

1	Washington Closur	e Hanford	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST RC-032-028										Page 1	of <u>I</u>
ŀ	Collector Collman			uny Contact . Coffman	Telephon 528-64				Project Coord KESSNER, JH		Price Code &K			Data Turnarounce	
ŀ	Project Designation (00-F Remaining Sites Burial	Grounds - Soil Full Prote		ling Location 7-F-5 Stock pile Area Ve	rification			- 1	SAF No. RC-032		Air Quality []			15 Day 5	
ŀ	Ice Chest No. ERC-9	9-062		Logbook No. -1174-l		COA R607F520				proceet	-				
Ţ	Shipped To EBERLINE SERVICES / LK	ONVILLE	Offsit	e Property No. AOG	033	8			Bill of Ladins	/Air Bill	No.	SEE	05/	C	
Ī	POSSIBLE SAMPLE HAZA				None	Cool 4C	_Coal 4C	Cool 40					}		
	< D.O.T. Linet			Preservation Type of Container		#G	aG aG aG		 	+	-			<u> </u>	
	Special Handling and/or S Cool 4 degrees C	Special Handling and/or Storage Cool 4 degrees C		No. of Container(s)	1	,	1	l					1		
1				Volume	250g	60mL	120mL	125m							
		SAMPLE ANALY	sis		See Itom (1) in Special Instructions.	PCBs - 8012	Somi-VOA - £270A (TCL)	Persicide 8081							
2	Sample No.	Matrix *	Sample Date	Sample Time					別道法						
~}	J11L18	SOIL	3/20/0	6 1100	X_	X	X	X		<u> </u>					-
		·			 				-					 	╂
7												<u> </u>			
ŀ	CHAIN OF POSSESSIO		Sign/Prin	it Names		SPE	CIAL INSTR	UCTIO	 NS	<u></u>				<u> </u>	Matr
}	Relinquished By/Removed From Coffmal Coff 'elinquished By/Removed From 3778 #28 3 2 Relinquished By/Removed From O	Date/Time 21-06 0900	Received By/Sto	red to D Ison RESon Ser	ste/Time 09	(I)	ICP Metuls - 601 mium, Calcium, (kei, Potassium, S	Chromiun	, Cobell, Copper	Iron Lea	d, Magn	esium, Man	ganese, Molyt	odenum,	S~Suit SE~Suit SO~Suit SI~Studi W = Wat O~Oil A~A=
	Refinition By Removed From	Christian 3-2/V	Received By/Sig	ex ped in D	ets/Time		150Mice 1804 wy								OS-Day OL-Dru T-Tissu WI-Wij L-Cape V-Vage
	Relinquished By/Removed From	Date/Time	Received By/Sto		ste/Fime	, R	clinquish samp	les from	3728						Nº Othe
	Relinquished By/Removed From														
	LABORATORY Received B	у		•	Ti	itle								Date/Time	

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	ı A		(c)	D	E
PROJECT: 160	7-8-3/160	7-F-S	DATA PACKAG	E: <0263	>
VALIDATOR:	TCZ	LAB: LU	•	DATE: 6	1/06
			SDG:	Kozcz	
		ANALYSES I	PERFORMED		
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATI	RIX				
JILL	7 3111	-18			
	1 3				
			-		
<u></u>					Soil
1. DATA PA Technical verification Comments:			CASE NARRATIV		Yes No N/A
GC/MS tuning/perf Initial calibrations a Continuing calibrat Standards traceable	ormance check acconceptable?ions acceptable?	eptable?			Yes No N/A
Calculation check a	cceptable?		•••		Yes No N/A
Comments:	·				

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Yes No N
Yes No N
Yes No N/
Yes (No) N/A
Yes (No) N/4
Yes No
Yes No (N/7
NO EB
<u> </u>
~
Yes No N/A
Yas No N/A
Yes No N/A
Yes No N/A
(Yes) No N/A
(Yes) No N/A
Yes No N/A
Yes No
Yes No N/A
Yes No (N/A
Yes No N/A
Yes (No N/A
Yes No (N/A
no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)	
MS/MSD samples analyzed?	No N/A
MS/MSD RPD values acceptable?	Yes No NA
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (N/A
MS/MSD standards expired? (Levels D, E)	Yes No (N/A
Field duplicate RPD values acceptable?	Yes No (N/A)
Field split RPD values acceptable?	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	
· · · · · · · · · · · · · · · · · · ·	
6. SYSTEM PERFORMANCE (Levels D and E)	\checkmark
Internal standards analyzed?	Yes No N/A
Iinternal standard areas acceptable?	Yes No N/A
Internal standard retention times acceptable?	Yes No N/A
Standards traceable?	Yes No N/A
Standards expired?	Yes No N/A
Transcription/calculation errors?	Yes No N/A
Comments:	•
7. HOLDING TIMES (all levels)	
Samples properly preserved?	()
Sample holding times acceptable?	
Comments:	

The Artist And Parkets and Artist Con-

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Va -
Wes No WA
Yes No NA
(Yes) No N/A
Yes No (N/A
Yes No N/A
Yes No N/A
Yes(No) N/A
Yes No (N/A
1
Yes No N/A
ı
Yes No N/A
res No N/A

Date:

6 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Sites 1607-F-3/1607-F-5

Subject: PCB/Pesticide - Data Package No. K0262-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0262 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

MaSameterions	w Sample Date	Media siyo:	Validation	Date
J11L17	3/20/06	Soil	C	See note 1
J11L18	3/20/06	Soil	С	See note 1

^{1 -} PCBs by 8082 & pesticides by 8081.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for nondetects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

· Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows

have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

· Completeness

Data Package No. K0262 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

 Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

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Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0262		Beofficia; 1. 607°F°5 818 2818607°F°9	PAGE 1 OF 1
COMMENTS:	A STATE OF THE STA	CONTRACTOR	State and the state of the stat
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS/MSD/LCS analysis

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CI	roject: WASHINGTON CLOSURE HANFORD										
Laboratory: LLI	SDG: K										
Sample Number		J11L17		J11L18							
Remarks											
Sample Date		3/20/06		3/20/06							
Extraction Date		3/23/06		3/23/06							
Analysis Date		3/28/06		3/28/06							
PCB	RQL	Result	Q	Result	Q						
Aroclor-1016	100	14	U	14	U						
Aroclor-1221	100	14	U	14	U						
Arocior-1232	100	14	U	14	U						
Aroclor-1242	100	14	C	14	U						
Arocior-1248	100	14	υ	14	U						
Aroclor-1254	100			5.5							
Aroclor-1260	100	14	J	14	U						
Sample Number	J11L17		J11L18								
Remarks	0111517		0.12.0								
Sample Date											
Extraction Date	·····	3/20/06		3/20/06							
Analysis Date		3/28/06		3/28/06							
Pesticide	RQL		Q	Result Q							
		KASUT									
	_				_						
Alpha-BHC	5	0.35	U	0.35	υ						
Alpha-BHC Gamma-BHC (Lindane)	5 5	0.35 0.35	U U	0.35 0.35	υ						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC	5 5 5	0.35 0.35 0.35	U U U	0.35 0.35 1.6	ט						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor	5 5 5	0.35 0.35 0.35 0.35	ט ט ט	0.35 0.35 1.6 0.35	כוככ						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC	5 5 5 5	0.35 0.35 0.35 0.35	บ บ บ บ	0.35 0.35 1.6 0.35 0.35	ככוכוככי						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin	5 5 5	0.35 0.35 0.35 0.35 0.35	บ บ บ บ บ	0.35 0.35 1.6 0.35	בכב בכ						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC	5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35	U U U U U	0.35 0.35 1.6 0.35 0.35 0.35	ט ט ט ט ט ט ט						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide	5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35	U U U U U U	0.35 0.35 1.6 0.35 0.35	ט ט ט ט ט ט						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane	5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35	ככככ						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I	5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.35 0.35	ט ט ט ט ט ט						
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane	5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.83 0.35 0.35	U U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE	5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.83 0.35 0.35 0.35 0.35	U U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35 1.8 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	U U U U U U	0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35 1.8 0.35 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35 1.8 0.35 0.35 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.60 0.35 1.8 0.35 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde Endosulfan sulfate	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde Endosulfan sulfate Methoxyclor	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35							
Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde Endosulfan sulfate	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.35 0.35 1.6 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35							

Report Date: 04/15/06 09:16

RFW Batch Number: 0603L573 Client: TNUHANFORD RC-032 K0262 Work Order: 11343606001 Page: 1

	Cust ID:	J11117	1	J11L17		J11L17		J11L18		PBLKDX	,	PBLKDX BS	
Sample	RFW#:	. 001	•	001 MS		001 MSD)	002	!	06LE0226-M	B 1	06LR0226-1	Æ 1
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.: Units:	1.00 UG/KG		1.00 UG/KG		1.00 UG/KG		1.00 UG/KG		1.00 UG/KG		1.00 UG/KG	
Surrogate:	Tetrachloro-m-xylene	111	४	115	*	122 *	*	117	*	115	*	108	*
	Decachlorobiphenyl	110	ŧ	118	¥	121	ŧ	112	*	116	*	111	ક
	************		=fl==		=fl=:		=fl==		=f1	*****	-f1	_========	==£
Aroclor-1016	5	14	U	112	*	122	*	. 14	U	13	U	103	Ł
Aroclor-1221	1	14	U	14	U	14	υ -	14	U	13	Ü	13	U
Aroclor-1232	2	14	U	14	U	14	U	14	U	13	Ū	13	Ū
Aroclor-1242	2	14	Ū	14	U	14	Ū	14	Ū	13	Ū	13	_
Aroclor-1248	3	14	Ū	14	U	14	Ū	14	Ū	13	.U	13	U
Aroclor-1254	4	3.4	J	I		I		5.5	J	13	U	13	U
Aroclor-1260	0	14	U	111	ŧ	117	*	14	Ū	13	Ū	109	₹ 18

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U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS* Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Pesticide/PCBs by GC, CLP List

Report Date: 04/06/06 12:09 RFW Batch Number: 0603L573 Client: TNUHANFORD RC-032 K0262 Work Order: 11343606001 Page: 1

•	Cust ID:	J11L17	7	J11L17		. J11L1 7	,	J11L18		PBLKDX		PBLKDX BS	ı
Sample RFW#:		001		001 MS		001 MSD		002		06LE0226-M	B1	06LE0226-	MB1
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	J
	D.F.:	1.0		1.0		1.0	00	1.0	0	1.0	0	1.	00
	Units:	UG/I	KG	UG/F	Œ	UG/I	(G	UG/K	G	UG/K	Œ	UG/	KG
Surrogate:	Tetrachloro-m-xylene	97	¥	103	*	100	- F	103		105	*	95	
	Decachlorobiphenyl	102	*	106	*	108	*	105	ŧ	108	*	106	ક
		0.35	==11=== U	90	≔Îl= %	93	=fl== %	0.35	≖£l U		_	医聚苯基异己基甲基基	==fl
gamma-BHC (Li	ndane)	0.35	Ü	99	ł	103	ş	0.35	IJ	0.33	Ü	83	*
Beta-BHC		0.35	U	98	ş	103	•	1.6	J	0.33	U	93	*
		0.35	Ū	99	&	103	ł	0.35	U	0.33	U	90	ŧ
Delta-BHC		0.35	Ū	84	ę.	89	•	0.35	נו	0.33	Ŭ	92	ŧ
Aldrin		0.35	Ü	100	لا	104	2	0.35	Ū	0.33	U	79	*
Heptachlor ep	ooxide	0.35	Ū	98	ŧ	103	ę	0.35	U	0.33 0.33	U	94	₹
gamma-Chlorda	ine	0.83	<u>.</u>	. 98	*	103	•	0.35	U	0.33	U	94	ł
Endosulfan I		0.35	Ū	102	*	106	· ·	0.60	J	0.33	U	94	*
alpha-Chlorda	ne	0.35	Ū	: 97	8	102	*	0.35	Ū	0.33	U	98 94	ę ę
_4,4'-DDE		0.49	J	106	*	111	*	1.8	•	0.33	U	100	*
Dieldrin		. 0.35	Ū	103	ŧ	108:	*	0.35	U	0.33	U	. 99	ł
DEndrin		0.35	ט	113	*	119	*	0.35	П	0.33	·U	101	*
		0.35	Ū	115	*	120	*	0.35	U	0.33	U	107	₹.
Endosulfan II		0.35	U	102	*	107	9	0.35	U	0.33	U	100	9. 8
V4,4'-DDT		0.35	J	104	웉	110	8	1.5	J	0.33	U	95	*
Endrin ardeny	ae	0.35	Ū	94	¥	98	&	0.35	ū	0.33	Ü	92	*
Endosulfan su	lfate	0.35	Ū	106	*	110	8	0.35	ū	0.33	Ü	101	8
Methoxychlor_		0.35	Ū	115	*	121	*	0.35	Ū	0.33	Ū	102	o L
Endrin ketone		0.35	U _	105	*	110	8	0.35	U	0.33	ט	102	*
Toxaphene		3.5	υJ	3.5	Ū	3.5	Ū	3.5	<u>"</u>	3.3	U	3.3	-

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-032

LVL#: 0603L573

PCB

SDG/SAF # K0262/RC-032

W.O. #: 11343-606-001-9999-00 Date Received: 03-22-2006

•

Two (2) soil samples were collected on 03-20-2006.

The samples and their associated QC samples were extracted on 03-23-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 03-28-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. One (1) of twelve (12) surrogate recoveries were outside acceptance criteria. However the surrogate recovery acceptance criteria were met (i.e. no more than one outlier per samples).
- 6. The blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

kim\r:\group\data\pest\tnu hanford\0603-573.pcbs





Case Narrative

Client: TNU-HANFORD RC-032

LVL#: 0603L573

SDG/SAF # K0262/RC-032

W.O. #: 11343-606-001-9999-00

Date Received: 03-22-2006

CHLORINATED PESTICIDES

Two (2) soil samples were collected on 03-20-2006.

The samples and their associated QC samples were extracted on 03-23-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 03-29-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance.
- Samples were extracted and analyzed within required holding time.
- 3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som\r:\group\data\pest\tnu hanford\0603-573s.pst

000016

louister.			Company Contact			TODY/SAMPLE ANALYSIS Telephone No.				Project Coordinator			Price Code & K		Data Turnaroung	
Coffinan Project Designation	. Coffman ing Location	528-6409 KESSNER SAF No.							Air Quality		15	DAYE				
100-F Remaining Sites Buria	I Grounds - Soil Full Pro		7-F-3 Stock pile Area Ve	erification				RC-032			All Quality					
ice Chest No. ERC-9	9-062		Logbook No. 1174-l	COA 3 RTC 8 16 06			ساة	М	Method of Shipment Fed Ex					<u></u>	ଅ ପ ପ	
Shinned To EBERLINE SERVICES LI		Offsite	Property No. AO	6033	8			В	iii of Lading/	Air Bill	No.	5EE	OSPC	-	Q.	
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Sample No.	Matrix *	Sample Date	Sample Time			M		71 F			糠					
J11L17	SOIL	3/20/06	1230	Χ	X	X	T >	۲	X	7	1					
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Relinquished By/Removed From	Date/Time	Received By/Sto		ate/Time 6	700	Nickel, Potassim	a, Seleniu	na, Sili	icon, Silver, Sodi	um, Van	ad iun	n. Zinc); Men	ury - 7470 -	(CV)	SO=Salid SI=Skalge	
3728 # 2A 3-21-0			ulon IN Shank	3-2/-	06	(2) Gamma Spe Europium-155);	kroscopy Gamma S	poc	List) (Cesium-13 Add-on (Silver-1	17, Coba 08 metas	II-60, table	, Сигорічил - (5) :}	2. Europium-t	54,	O=Oil	
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FINAL SAMPLE Disposal h	fethod	•			<u> </u>	D	sposed B	У						Date/l'ime		

Washington Closur	e Hanford	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS					REQUES	T	RC-032-028		028 Page	7 of T
Collector Collman		-	Company Contact Telephone No. R.T. Coffman 528-6409					Project Coor KESSNER, J		Price Code &K		Data	CARDOTARTUT :
Project Designation 100-F Remaining Sites Buria							SAF No. RC-032		Air Quality [1	15 Day 8	
ice Chest No. ERC-9	9-062		Logbook No. -1174-1		COA R607F520	00		Method of Sh Fed Ex	ipment				3886 3886
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Special Handling and/or S Cool 4 degrees C	storage		No. of Container(s)	1	I	1	1						
			Volume	250g	60mL	120mL	125m	L					
	Sample anai	LYSIS		Sociem (1) in Special Instructions.	PCBs - 8062	Semi-VOA - 8270A (TCL)	Pesticide 8081						
Sample No.	Matrix *	Sample Date	Sample Time						Cat Extrage (ATAIN BOOK	27.51.5 (0.23)	
J11L18	SOIL	3/20/0		X	X	χ	X						
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·													
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LABORATORY Received B	Зу			Til						<u> </u>		Date/l'in	ъ
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Appendix 5

Data Validation Supporting Documentation

	,				,	
VALIDATION LEVEL:	A	В		D		Е
PROJECT: 16	07-F-3/160	57-F-5	DATA PACKAG	E: KOZGZ	2.	
VALIDATOR:	TCI	LAB: LL	I	DATE: 6/2/	104	
			SDG:	40262		
		ANALYSES I	PERFORMED			
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)			
SAMPLES/MATI	RIX			· · · · · · · · · · · · · · · · · · ·		
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				· • • • • • • • • • • • • • • • • • • •		
				 		
					Soil	
	······································				300	
1. DATA PA Technical verification Comments:	CKAGE COMPL on documentation p				Yek	Ng N/A
	ENT PERFORM			•		
Initial calibrations ac Continuing calibration						i
Standards traceable?						
Standards expired?						
Calculation check ac						, ,
DDT and endrin brea						
Comments:						$\overline{}$

3. BLANKS (Levels B, C, D, and E)			
Calibration blanks analyzed? (Levels D, E)	Yes	Nd	NL
Calibration blank results acceptable? (Levels D, E)	Yes	-No	N/
Laboratory blanks analyzed?	(Yes) No	N/2
Laboratory blank results acceptable?	Yes	No	N/
Field/trip blanks analyzed? (Levels C, D, E)			
Field/trip blank results acceptable? (Levels C, D, E)			
Transcription/calculation errors? (Levels D, E)			
Comments:	<u>no</u>		
		•	
4. ACCURACY (Levels C, D, and E)			
Surrogates analyzed?			
Surrogate recoveries acceptable?			
Surrogates traceable? (Levels D, E)			
Surrogates expired? (Levels D, E)			
MS/MSD samples analyzed?			
MS/MSD results acceptable?	(. Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	NA
LCS/BSS samples analyzed?	Yes	No	N/A
LCS/BSS results acceptable?	Ye s	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(N/A
Standards expired? (Levels D, E)			
Transcription/calculation errors? (Levels D, E)			
Performance audit sample(s) analyzed?			N/A
Performance audit sample results acceptable? Comments: No toxophare US/USD/LC5 - J cell			
comments: Vio 10 kelitare has/0(3D/Let) - J all		 -	

5. PRECISION (Levels C, D, and E)	
Duplicate RPD values acceptable?	(Yes)No N/A
Duplicate results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (N/A
MS/MSD standards expired? (Levels D, E)	Yes No (N/A
Field duplicate RPD values acceptable?	
Field split RPD values acceptable?	Yes No N/A
Transcription/calculation errors? (Levels D, E) Comments: No toxaphe Ms/MsD — Tall	Ves No N/A
6. SYSTEM PERFORMANCE (Levels D and E)	
Chromatographic performance acceptable?	■ T
Positive results resolved acceptably?	
Comments:	
7. HOLDING TIMES (all levels)	
Samples properly preserved?	Yes No N/A
Sample holding times acceptable?	
Comments:	

Compound quantifation acceptable? (Levels D, E)	Yes No (N
	Yes No (N
Compound quantitation accentable? (Levels D. E.)	
Compound quantitation acceptable? (Levels D, E)	
Results reported for all requested analyses?	Yes No N
Results supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	Yes No N
Detection limits meet RDL?	Yes No N
Transcription/calculation errors? (Levels D, E)	
Comments:	
9. SAMPLE CLEANUP (Levels D and E)	
Fluoricil ® (or other absorbent) cleanup performed?	
Lot check performed?	Yes No√N/
Check recoveries acceptable?	
GPC cleanup performed?	Yes No N/
GPC check performed?	Yes No N/
GPC check recoveries acceptable?	Yes No N/
GPC calibration performed?	Yes No N/
GPC calibration check performed?	
GPC calibration check retention times acceptable?	1
Check/calibration materials traceable?	I
Check/calibration materials Expired?	
Analytical batch QC given similar cleanup?	
Transcription/Calculation Errors?	
Comments:	
——————————————————————————————————————	

Date:

6 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Sites 1607-F-3/1607-F-5

Subject: Inorganics - Data Package No. K0262-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0262 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

la Saune Tulia	la Galinia le 20 è de de		i Validation	Date
J11L17	3/20/06	Soil	_ C	See note 1
J11L18	3/20/06	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

· Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to an LCS recovery outside QC limits (23.5%), all silicon results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (54.3%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (33.7%), all barium results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. K0262 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to an LCS recovery outside QC limits (23.5%), all silicon results were qualified as estimates and flagged "J".
- Due to a matrix spike recovery outside QC limits (54.3%), all antimony results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (33.7%), all barium results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0262-		. Preject: 1607₅F⊧3 	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery
Silicon	J	All	LCS recovery
Barium	J	All	RPD

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

p. w							
Project: WAS			UR	E HANFO	DRD)	
Lab: LLI		K0262	_				
Sample Numb	er	J11L17		J11L18			
Remarks							
Sample Date		3/20/06		3/20/06			
Inorganics	RQL		Q	Result	ᆫᆖᆜ	Result	Q
Silver	0.2	0.07	U	0.07	_		
Aluminum		5460		5450			
Arsenic	10	12.1		2.8			
Boron		1.7		3.0			
Barium	2	60.2	J	69.7	J		
Beryllium		0.02		0.09			
Calcium		4180		5730			
Cadmium	0.2	0.27		0.33			
Cobalt		5.2		5.1			
Chromium	1	9.4		8.6			
Copper		14.5	l	12.6			
Iron		13000		12700	1		
Mercury	0.2	0.03		0.02	U		
Potassium		1160		1210			
Magnesium		3430		3440			Π
Manganese		255		239			
Molybdenum		0.29	U	0.31			
Sodium		100		111			
Nickel		9.6		9.3			
Lead	5			6.9	_		
Antimony		0.45	UJ				
Selenium	1	0.48	U	0.48	U		
Silicon		630	J	530	J		
Vanadium		28.2		29.0			
Zinc	1	38.4		35.3			

INORGANICS DATA SUMMARY REPORT 04/03/06

CLIENT: TNUHANFORD RC-032 K0262 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0603L573

		•			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	Result	UNITS	LIMIT	FACTOR
*****	*************	黑管明节医口管系统医疗 医苯酚拉二苯苯二苯基苯基	****	*****	- 14 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	******
-001	J11L17	Silver, Total	0.07 и	MG/KG	0.07	1.0
		Aluminum, Total	5460	MG/KG	2.9	1.0
		Arsenic, Total	12.1	MG/KG	0.62	1.0
		Boron, Total	1.7	MG/KG	0.24	1.0
		Barium, Total	60.2 [MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.02	1.0
	•	Calcium, Total	4180	MG/KG	1.7	1.0
		Cadmium, Total	0.27	MG/KG	0.07	1.0
		Cobalt, Total	5.2	MG/KG	0.14	1.0
		Chromium, Total	9.4	MG/KG	0.13	1.0
		Copper, Total	14.5	MG/KG	0.12	1.0
		Iron, Total	13000	MG/KG	3.5	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Potassium, Total	1160	MG/KG	2.3	1.0
	•	Magnesium, Total	3430	MG/KG	0.98	1.0
•		Manganese, Total	255	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	100	MG/KG	0.77	1.0
		Nickel, Total	9.6	MG/KG	0.24	1.0
		Lead, Total	. 54.9	MG/KG	0.31	1.0
		Antimony, Total	0.45 u_	MG/KG	0.45	1.0
		Selenium, Total	0.46 u	MG/KG	0.48	1.0
		Silicon, Total	630 J	MG/KG	2.3	1.0
		Vanadium, Total	28.2	MG/KG	0.09	1.0
4		Zinc, Total	38.4	MG/KG	0.16	1.0

Malou

INORGANICS DATA SUMMARY REPORT 04/03/06

CLIENT: TNUHANFORD RC-032 K0262 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0603L573

					REPORTING	DILUTION
Sample	SITE ID	ANALYTE	result	UNITS	LIMIT	FACTOR
****			****			******
-002	J11L18	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5450	MG/KG	2.9	1.0
		Arsenic, Total	2.8	MG/KG	0.62	1.0
		Boron, Total	3.0 .	MG/KG	0.25	1.0
		Barium, Total	69.7 J	MG/KG	0.02	1.0
		Beryllium, Total	0.09	MG/KG	0.02	1.0
		Calcium, Total	5730	MG/KG	1.7	1.0
		Cadmium, Total	0.33	NG/KG	0.07	1.0
		Cobalt, Total	5.1	MG/KG	0.14	1.0
		Chromium, Total	8.6	NG/KG	0.13	1.0
		Copper, Total	12.6	MG/KG	0.12	1.0
		Iron, Total	12700	MG/KG	3.6	1.0
	•	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1210	MG/KG	2.3	1.0
		Magnesium, Total	3440	MG/KG	0.99	1.0
		Manganese, Total	239	MG/KG	0.03	1.0
		Molybdenum, Total	0.31	MG/KG	0.30	1.0
		Sodium, Total	111	MG/KG	0.78	1.0
		Nickel, Total	9.3	MG/KG	0.25	1.0
		Lead, Total	6.9	MG/KG	0.32	1.0
		Antimony, Total	0.45 uJ	MG/KG	0.45	1.0
		Selenium, Total	0.49 u	NG/KG	0.48	1.0
		Silicon, Total	530 5	NG/KG	2.3	1.0
		Vanadium, Total	29.0	MG/KG	0.09	1.0
	•	Zinc, Total	35.3	MG/KG	0.16	1.0

Myla

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD RC-032

W.O.#: 11343-606-001-9999-00

LVL#: 0603L573

Date Received: 03-22-06

SDG/SAF#: K0262/RC-032

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
 - a). The MB result for Silver was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level}, however, all samples read less than the IDL
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 23.5%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.
- 10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of $|\mathcal{O}|$ pages.

dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

		<u>PDS</u>	<u>PDS</u>
Sample ID	<u>Element</u>	Concentration (ppb)	% Recovery
J11L17	Aluminum	12,000	89.7
	Iron	22,000	83.4
	Antimony	100	93.3
•	Silicon	2,100	92.7

- 12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Jain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m03-573

<u>4/∞</u> Date



Total Content Total Conten	Washington Closure Hanford			CHAIN OF CUSTODY/SAMPLE ANALYSIS R						RÉQUEST			RC-032-027			of 1
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Preservation Preservation Preservation Preservation Type of Container No. of Centainer(s) No. of Centainer(s	EBERLINE SERVICES		Offsite	e Property No. AO	6033	8.			Bill of L	.ading/Ai	r Bill N	اه. ح	EE .	OSPC	<u>.</u>	·
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No. of Container(s) Volume 250g 60nd. 120nd. 120n	Special Handling and/or	Storage		Type of Container	∌G	aG	.aG	aG		aG	G/F					
Sample No. Matrix * Sample Date Sample Time CHAIN OF POSSESSION Sign/Frist Names CHAIN OF POSSESSION Sign/Frist Names CHAIN OF POSSESSION Sign/Frist Names Sign/Frist Names Serviced By/Spord in Referenced By/Spord in Referenced By/Spord in Referenced By/Spord in Sign/Frist Names SPECIAL INSTRUCTIONS SPECIAL INSTRUCTIONS SPECIAL INSTRUCTIONS SPECIAL INSTRUCTIONS (I) (C) Metals - 6010 (Client List) (Auminum, Antirocry, Arcenic, Barkur, Beryfilman, Boron, Calminan, Calcinan, Cal				No. of Container(s)		l	ı	i		1	1					
Sample No. Matrix * Sample Date Sample Time Soil. 3/20/06 (250 X X X X X) Sign/Print Names CHAIN OF POSSESSION Relinquisted By/Removed from Date/Time 1/20/20 Received By/Spired In Date/Time 2/20/20 (1) (CM-etab60) (CReet Lin) [Aluminum, Antimory, Arasia: Barrium, Bergittum, Boron. Relinquisted By/Removed From Date/Time 2/20/20 (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)				Volume	250g	60mL	120mL	120p	nnik I	25mL	500mi	-				
Sample No. Matrix * Sample Date Sample Time J111.17 SOIL 3/20/66 12.50 X X X X X X X X X X X X X X X X X X X	00001	SAMPLE ANA	LYSIS		Special	PCBs - 808				ficides - Se 508 i	lestriction	a) (a)				
CHAIN OF POSSESSION Sign/Frint Names Relinquisted By/Removed from Date/Time 500 Received By/Stored In CONTROL Date/Time 500 Received By/Stored In Date/Time 500 Received By/Stored In Relinquisted By/Removed From Date/Time Received By/Stored In Relinquisted By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Relinquisted By/Removed From Date/Time Received By/Stored In Date/Time Date/Time Received By/Stored In Date/Time Re		Matrix *	Sample Date	Sample Time												W.
Relinquisted By/Removed From Date/Time 1500 Received By/Stored In Received By/Stored In Date/Time 1500 Date/Tim	J11L17	SOIL	3/20/06	1230	X	X	X	X		χ.	0					
Relinquished By/Removed From Date/Time 500 Received By/Stored In Date/Time 500 Cadmium, Calcium, Chromium, Calcium, Chopper, Iron, Lead, Magnesium, Manganese, Molybdensum, Nickel, Potassium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) 378 # 24								-				₩-		<u>-</u>		
Relinquished By/Removed From Date/Time SOO Received By/Stored In Date/Time SOO SIVER Solidary, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdensum, Nickel, Potassium, Selectium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) 3718 # 24 3-21-06 0900 Telefrime Interpretation of the Community of the Co		1	 			<u> </u>		-		-		\ 			+	
Relinquished By/Removed From Date/Time 500 Received By/Stored In Date/Time 500 Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdensum, Nickel, Potestian, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) 378 # 24					 				-		•	₩	-			
Retinquished By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Date/Time Date/Time Date/Time Date/Time Received By/Stored In Date/Time Date/Time Date/Time Date/Time Date/Time Received By/Stored In Date/Time Date/Time Date/Time Received By/Stored In Date/Time Date/Time Date/Time Date/Time Received By/Stored In Date/Time Date/Time Date/Time Date/Time Date/Time Received By/Stored In Date/Time Dat						SPI	ECIAL INSTI	RUCTIO	ONS			-				Matrix *
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquish samples from 3728 Ref # 2P on 3 121106 LABORATORY Received By Received By Title Date/Time Date/Time Date/Time Date/Time Personnel not available to relinquish samples from 3728 Ref # 2P on 3 121106	RT COFFMAN PT Relinquished By/Removed From 3738 # 2A 3-21- Relinquished By/Removed From Relinquished By/Removed From	Of 0900 WELL Date/Time 112	Received By/Sto FED 6	and in Section 10 and in the section 10 and	3/20/04 Date/Time 05 Date/Time	(1) Ca POO Nic (2) Eur	dmium, Calcium, :kel, Potassium, ! - Gamma Spectro	, Chromiu Selenium, oscopy (T	an, Cobalt, Silicon, Sil CL List) (C	Copper, Iro Iver, Sodius Tesium-137,	n, Lead, n, Vanad , Cobalt-	Magnesiu lium, Zinc 60, Europ	um. Manga	inese, Molyt y - 7470 - (1	odenam. CV)	S-Suil SE=Sudiment SO-Suid SI=Skinge W - Water O-Oil A - A ir DS-Orato Suil DL-Drain Liq T-Tissee Wlowfix
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LABORATORY Received Hy Title Date/Time SECTION		Date/Time			Date/Time	re	linguish samp	les from	3728	,						
	i menoracione i	l By	<u> </u>		Ti				- 		-				Date/Time	
FINAL SAMPLE Disposal Method Disposal Method Disposal Method Disposal Method	FINAL SAMPLE Disposal	Method					Disp	osed By				·			Date/l'ine	

Washington Closure Hanford			CHAIN OF CUSTODY/SAMPLE ANALYSIS R						REQUEST RC-032-02			Page 1 of 1		
Collector Coliman			Company Contact Telephone No. P R.T. Coffman 528-6409 K						ingtor	Price Code & K		Data Tu	Data Turancound	
Project Designation 100-F Remaining Sites Buri	al Grounds - Soil Full P		I					SAF No. RC-032		Air Quality [15 Day :		
Ice Chest No. ERC - 9	9-062		Legbook No. - [174-]		COA R607F520	00		Method of Shi Fed Ex	pment	····			1	
Shipped To EBERLINE SERVICES / L	ONVILLE	Offsite	e Property No. AOG	6033	8			Bill of Lading	/Air Bill	No. 5&	E OSP	'C		
POSSIBLE SAMPLE HAZ	•		Preservation	None	Cool 4C	Coal 4C	Coel 4	С						
 /a>		•	Type of Container	#G	aG	aG	Эe							
Cool 4 degrees C	-		No. of Container(s)	t ·	£	1	1							
	,		Volume	250g	60mL	120mi	125m	L	}			<u> </u>		
000017	SAMPLE ANA	LYSIS		See item (1) in Special Instructions,	PCBs - 5062	Scrui-VOA - 8278A (TCL)	Pesticide 8081							
Sample No.	Matrix *	Sample Date	Sample Time				ENGLEY.					Lesione		
J11L18	SOIL	3/20/0		X	X	X	X						**************************************	
	 			· ·			ļ <u>.</u>							
					<u> </u>				+			 	-	
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Relinquished By/Removed From U - N Edwar Vond Sor		Received By/Sto	ered in D	Pate/Time		٠							O=Oil A=Air OS=Distin Solt OL=Oresta Lup F=Tissue WT=Wipe	
	7-3-3-0(09-30) Date/Time	Received By/Sto	Lorent 3-22	to 090 Pate/Time	re: Re	aomec noca linquish sam	ies fron	1 3728					L=Liquel V=Vegitation X* Other	
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LABORATORY Received SECTION	Ву			Ti	le			<u></u>				Date/Time		
FINAL SAMPLE Disposal	Method	·				D:	sed By					DateTime		

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	E
PROJECT:	CBRA 1607	-F-3/1607-F-5	DATA PACKAG		2
VALIDATOR:	TLI	LAB: LLT	•	DATE: 5/3/	/00
			SDG: KO	262	
		ANALYSES	PERFORMED		
SW-846/ICP	SW-846/GFAA (SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATE	RIX				
1117		<u> </u>			
7.10	317 011	<u> </u>			
					-1
				<u></u>	0 . 1
Technical verification	on documentation p				Yes(No)N/A
2. INSTRUM	IENT PERFORM		,	•	V- V- (V-
Initial calibrations a					1
ICP interference che					, ,
ICV and CCV check					1 1
ICV and CCV check					,
Standards traceable?					€
Standards expired?.					· ·
Calculation check ac					١
Comments:					

3. BLANKS (Levels	B, C, D, and E)					
ICB and CCB checks perfo	rmed for all applicable analyses? (Levels D, E)	Yes	No (N/A			
ICB and CCB results accep	table? (Levels D, E)	Yes	No (N/A			
Laboratory blanks analyzed	Laboratory blanks analyzed?					
Laboratory blank results ac	<i>7</i> 785,	No N/A				
Field blanks analyzed? (Le	Yes	(No)N/A				
Field blank results acceptal	Yes	No (N/A				
Transcription/calculation en	rrors? (Levels D, E)	Yes	No (N7)			
Comments:						
4. ACCURACY (Le	evels C, D, and E)	<u> </u>				
MS/MSD samples analyzed	1?	Yes	No N/A			
MS/MSD results acceptable	e?	Yes	No) N/A			
MS/MSD standards NIST t	raceable? (Levels D, E)	Yes	No NIA			
MS/MSD standards expired	i? (Levels D, E)	Yes	No (N/A			
LCS/BSS samples analyzed	1?	(Yeş	No N/A			
LCS/BSS results acceptable	e?	Yes	(Nd) N/A			
Standards traceable? (Leve	ls D, E)	Yes	No (N/A			
Standards expired? (Levels	D, E)	Yes	No N/A			
Transcription/calculation en	тоrs? (Levels D, E)	Yes	No WA			
Performance audit sample(s) analyzed?	Yes	(NO) N/A			
Performance audit sample i	esults acceptable?	Yes	No (N/A			
Comments:		100	PAS			
Ontimany 5	54.35. Ms - Jall		· · · · · · · · · · · · · · · · · · ·			
gilica 2	3.5% LCS - Jall					

5. PRECISION (Levels C, D, and E)									
Duplicate RPD values acceptable?	Yes (No)N								
Duplicate results acceptable? MS/MSD standards NIST traceable? (Levels D, E) MS/MSD standards expired? (Levels D, E) Field duplicate RPD values acceptable? Field split RPD values acceptable?									
								Transcription/calculation errors? (Levels D, E)	Yes No (N
6. ICP QUALITY CONTROL (Levels D and E)									
ICP serial dilution samples analyzed?	Yes No N								
ICP serial dilution %D values acceptable?									
ICP post digestion spike required?	i i								
ICP post digestion spike values acceptable?	Yes No N								
Standards traceable?	Yes No N								
Standards expired?	Yes No N								
Transcription/calculation errors?	Yes No N								
Comments:									

7.	FURNACE AA QUALITY CONTROL (Levels D and E)			
Duplica	ate injections performed as required?	Yes	No	N/A
Duplica	ate injection %RSD values acceptable?	Yes	No	N/A
Analyti	cical spikes performed as required?	Yes	No	N/A
Analyti	cical spike recoveries acceptable?	Yes	No	N/A
Standa	rds traceable?	Yes	No	N/A
Standa	rds expired?	Yes	Νo	N/A
MSA p	performed as required?	Yes	No	N/A
MSA r	results acceptable?	Yes	No	N/A
Transci	ription/calculation errors?	Yes	No	N/X
Comme	ents:			
8.	HOLDING TIMES (all levels)			
-	es properly preserved?	Yes	No	N/A
	e holding times acceptable?		No	N/A
	ents:	1 /	<u>′ </u>	
				·

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results reported for all requested analyses?	(Yes) No N/A
Results reported for all requested analyses? Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No (N/A
Detection limits meet RDL?	(Yes)No N/A
Detection limits meet RDL? Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	

Additional Documentation Requested by Client

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/03/06

CLIENT: TNUHANFORD RC-032 K0262 WORK ORDER: 11343-606-001-9999-00

					reporting	DILUTION
SAMPLE	SITE ID	analyte	result	units	LIMIT	PACTOR
*****		美华的名词复数 的复数 医克里克斯 医甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	========	# TERPR	*****	
BLANK1	06L0184-MB1	Silver, Total	0.31	MG/KG	0.07	1.0
		Aluminum, Total	5.2	MG/KG	2.9	1.0
		Arsenic, Total	0.61 u	MG/KG	0.61	1.0
		Boron, Total	0.28	MG/KG	0.24	1.0
		Barium, Total	0.33	MG/XG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	. 1.0
		Calcium, Total	1.6 u	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.13 u	MG/KG	0.13	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.8	MG/KG	3.5	1.0
		Potassium, Total	Э.а	MG/KG	2.3	1.0
		Magnesium, Total	0.97 u	MG/KG	0.97	1.0
		Manganane, Total	0.03 u	MG/KG	0.03	1.0
		Molybdenum, Total	0,29 u	MG/KG	0.29	1.0
		Sodium, Total	1.1	MG/XG	0.76	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.44 u	MG/KG	0.44	1.0
		Selenium, Total	0.62	NG/KG	0.47	1.0
		Silicon, Total	2.3 u	MG/KG	2.3	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
	•	Zinc, Total	0.16 u	MG/KG	0.16	1.0
BLANK1	06C0055-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

INORGANICS ACCURACY REPORT 04/03/06

CLIENT: TNUHANFORD RC-032 K0262 WORK ORDER: 11343-606-001-9999-00

			SPIKED	INITIAL	SPIKED		DILUTION
Sample	SITE ID	ANALYTE	SAMPLE	RESULT	TRUOMA	*RECOV	factor (SPK)
	医生生素 医多种类体 医甲基甲基 医甲基苯基	《《月日日日日》》》《日本公司公司	564m # 48		血红宝宝苹果	52 ##FER	电影型机器图像显示 量
-001	J11L17	Silver, Total	4.5	0.07u	5.1	88.2	1.0
		Aluminum, Total	5950	5460	202	242.7*	1.0
		Arsenic, Total	192	12.1	202	83.9	1.0
		Boron, Total	82.1	1.7	101	79.4	1.0
		Barium, Total	246	60.2	202	91.7	1.0
		Beryllium, Total	4.8	0.02	5.1	93.6	1.0
•		Calcium, Total	6550	4180	2530	93.8	1.0
		Cadmium, Total	4.8	0.27	5.1	88.8	1.0
	•	Cobalt, Total	51.6	5.2	50.6	91.7	1.0
		Chromium, Total	28.1	9.4	20.2	92.6	1.0
		Copper, Total	38.9	14.5	25.3	96.4	1.0
		Iron, Total	12200	13000	101	-720. *	1.0
		Mercury, Total	0.22	0.03	0.16	121.5	1.0
		Potassium, Total	3380	1160	2530	87.6	1.0
		Magnesium, Total	5690	3430	2530	B9.1	1.0
		Manganess, Total	300	255	50 . 6	87.5*	1.0
		Molybdenum, Total	91.8	0.29u	101	90.7	1.0
		Sodium, Total	2420	100	2530	91.5	1.0
		Nickel, Total	55.7	9.6	50.6	91.1	1.0
		Lead, Total	97.7	54.9	50.6	84.6	1.0
		Antimony, Total	27.5	0.4512	50.6	54.3	1.0
		Selenium, Total	165	0,48u	202	81.6	1.0
		Silicon, Total	982	630	101	353.7*	1.0
		Vanadium, Total	72.3	28.2	50.6	87.2	1.0
		Zinc, Total	80.4	38.4	50.6	83.0	1.0

INORGANICS PRECISION REPORT 04/03/06

CLIENT: THUHANFORD RC-032 K0262

MORK	OPDER:	11343-606-001-9999-00	
WOLT !	OKDBK.	11343-000-001-3333-00	

			Initial			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	PACTOR (RBP)
Ex#307#			******	****	*****	****
-001RBP	J11L17	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	5460	5460	0.14	1.0
		Arsenic, Total	12.1	12.1	0.00	1.0
		Boron, Total	1.7	1.7	0.00	1.0
		Barium, Total	60.2	84.6	33.7	1.0
		Beryllium, Total	0.02	0.07	92.1	1.0
		Calcium, Total	4180	4060	3.0	1.0
		Cadmium, Total	0.27	0.33	18.5	1.0
		Cobalt, Total	5.2	5.1	1.9	1.0
	•	Chromium, Total	9.4	11.4	19.2	1.0
		Copper, Total	14.5	15.2	4.7	1.0
		Iron, Total '	13000	12500	3.7	1.0
		Mercury, Total	0.03	0.03	10.5	1.0
		Potassium, Total	1160	1160	0.21	1.0
		Magnesium, Total	3430	3420	0.48	1.0
	•	Manganese, Total	255	253	0.98	1.0
		Molybdenum, Total	0.29u	0.2 9 u	NC	1.0
		Sodium, Total	100	99.3	0.70	1.0
		Nickel, Total	9.6	9.5	1.0	1.0
		Lead, Total	54.9	55.7	1.4	1.0
		Antimony, Total	0.45u	0.45u	NC	1.0
		Selenium, Total	0.48u	0.48u	NC	1.0
		Silicon, Total	630	595	5.7	1.0
		Vanadium, Total	28.2	27.0	4.3	1.0
		Zinc, Total	38.4	44.2	14.0	1.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/03/06

CLIENT: TNUHANFORD RC-032 K0262 WORK ORDER: 11343-606-001-9999-00

			SPIKED	SPIKED		
SAMPLE	SITE ID	RTYLANA	SAMPLE	THUOMA	UNITS	*RECOV
====		*============	**	0=00xz		**=+==
LCS1	06L0124-LC1	Silver, LCS	47.0	50.0	MG/KG	94.0
		Aluminum, LCS	495	500	NG/KG	99.0
		Arsenic, LCS	886	1000	MG/KG	88.6
		Boron, LCS	454	500	MG/KG	90.7
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	23.2	25.0	MG/KG	92.8
		Calcium, LCS	2290	2500	NG/KG	91.6
		Cadmium, LCS	22.6	25.0	MG/KG	90.4
		Cobalt, LCS	229	250	NG/KG	91.6
		Chromium, LCS	46.7	50.0	MG/KG	93.4
		Copper, LCS	126	125	MG/KG	101.1
		Iron, LCS	470	500	MG/KG	94.0
		Potassium, LCS	2500	2500	MG/KG	99.9
	•	Magnesium, LCS	2330	2500	MG/KG	93.2
		Manganese, LCS	72.B	75.0	MG/KG	97.1
		Molybdenum, LCS	473	500	MG/KG	94.6
•		Sodium, LCS	2380	2500	MG/KG	95.4
	,	Nickel, LCS	185	200	NG/KG	92.4
		Lead, LCS	229	250	MG/KG	91.6
		Antimony, LCS	283	300	MG/KG	94.4
		Selenium, LCS	873	1000	MG/KG	87.3
		Silicon, LCS	117	500	MG/KG	23.5
		Vanadium, LCS	238	250	MG/KG	95.0
		Zinc, LCS	89.3	100	MG/KG	89.3
LCS1	06C0055-LC1	Hercury, LCS	6.9	6.2	MG/KG	111.1